
IM-1 MILLION
in a

Nov & Dec 1983

Page 1

Well here we are at the end of another year for the newsletter

One of the common questions we hear is "what will you be doing and where will you be next year?" Well we'll be in the same place and doing just about the same things.

GeoGrafix will be putting out the newsletter for 1984 but we will still be handling the maintenance, APP programs, peripherals, and just about anything else you can think of. Still no word by the way on the FI-100 replacements.

Geotgrafix will do a fine job for 1984 and we look forward to their first issue just like you do.

It's really amazing how you members have grown during this last year. Fish out some of the old NICC's and read some of the questions you were sending out at the time and compare them to the questions in this months issue - see what I mean.

To show our appreciation to all of the 1983 MEMBERS I have written a LUNAR LANDER program which is in machine language and I think is a good one, so if you want it all you have to do is pay postage and handling of 2.95 for it or if you send in your 1984 membership dues before Dec 31, 1983 it is free. So hurry and get that membership fee in.

Here are some other things that have been sent in by members and you can get them just for the cost of printing, shipping & handling.

1. From Louis Bolduc, all you need to know about the DOS, (DISC OPERATING SYSTEM) just \$2.00
2. From Thomas Fairbairn, instructions for modifying the IM-1

for use with a monitor.... just \$2.00

3. From Thomas Fairbairn, a very detailed explanation for the use of the APP Assembler and Editor programs (appx 30 pages) just \$7.00

4. Also for those out there that are serious about learning how the IM-1 does its thing here are the original MACHINE LANGUAGE ASSEMBLY listing for only \$19.95.....

You will notice that the issue is a lot bigger than normal, well for those that missed it we are combining the Nov & Dec issues because of postal problems. You will see that the pages 11 - 28 are the Dec issue and they are all programs, just for your Christmas gift.....

FROM LOUIS SABO

I have a question about choosing a disc drive for my computer. Can the FI-100 work with a 5500 disc? I am not worried about unused capacity, but whether it can store and retrieve data. A computer I am building is going to be formatted for double density and I would like to get a disc now and use it with the AFF until the other is finished.

ANSWER: If the drive you want to use is compatible with the SHUGART 408L drive it will work. This is a very common type of drive and most of the 40 track 5 1/4 inch drives are compatible with it..... Be sure to check with the dealer on this or check the schematics yourself for the compatibility.

GOOD LUCK ON YOUR COMPUTER. Let us know how it turns out.
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FROM RONNIE CARTHAN

I would like to know if you have any info as to how to access the GRAPHIC portion of the GEMINI 10-X printer? can you help?

ANSWER: Here are 2 simple programs that demonstrate how to use the Block & Hires ability of the GEMINI 10X printer.

```

1 REM HERE IS A SIMPLE PROGRAM TO PRINT BLOCK CHARACTERS ON THE
2 REM GEMINI 10X PRINTER
3 PRINT:REM TURN ON PRINTER
10 PRINT CHR$(27);"A":CHR$(5): REM THIS SETS LINE SPACING TO 6/72
11 FOR K = 1 TO 10
12 PRINT CHR$(27);"B":CHR$(K): REM THIS SETS THE "CPI"
13 RESTORE
14 PRINT CHR$(27);"" : REM this sets the 8th bit in the printer
15 REM BECAUSE THE IM-1 CAN ONLY SEND 7 BITS
20 FOR J = 1 TO 9: FOR I = 1 TO 12: READ A
45 IF A > 127 THEN A = A - 128
50 PRINT CHR$(A): NEXT I : PRINT : NEXT J
60 DATA 224,224,224,224,224,224,224,224,224,224,224,224
91 DATA 224,224,224,224,224,224,224,224,224,224,224,224
92 DATA 224,224,224,224,224,224,224,224,224,224,224,224
93 DATA 224,224,224,224,224,224,224,224,224,224,224,224
94 DATA 224,224,224,224,224,224,224,224,224,224,224,224
95 DATA 224,224,224,224,224,224,224,224,224,224,224,224
96 DATA 221,241,241,241,241,241,241,241,241,241,241,241
97 DATA 229,175,175,175,175,175,175,175,175,175,175,175
98 DATA 229,229,229,229,229,229,229,229,229,229,229,229
99 PRINT: NEXT K: PRINT CHR$(27);"B": REM CLEAR PRINTER
100 PRINT#: END
  
```

```

1 REM THIS PROGRAM WORKS IN HIRES MODE ON THE GEMINI 10X
3 PRINT: RESTORE: PRINT CHR$(27);"B": REM CLEAR PRINTER
10 PRINT CHR$(27);"1": REM SET PRINTER TO 7/72 LINE SPACE
20 FOR CHAR = 1 TO 5: FOR LINE = 1 TO 2
40 PRINT CHR$(27);"K":CHR$(114):CHR$(0): REM SET PRINTER TO 60
41 REM DOTS PER INCH
50 FOR SPACE = 1 TO 100: PRINT CHR$(0): NEXT SPACE
60 FOR COL = 1 TO 14: READ C: IF C > 127 THEN C = C-128
70 PRINT CHR$(C): NEXT COL: PRINT : NEXT LINE: RESTORE
75 NEXT CHAR
80 DATA 14,16,34,64,12,12,0,0,12,12,64,34,16,14
90 DATA 96,16,184,68,34,18,18,18,34,68,114,16,96
100 PRINT CHR$(27);"9": PRINT : PRINT #0
110 REM CHANGE LINE 50 TO PRINT CHR$(27);"L":CHR$(114):CHR$(0)
120 REM TO GET DIFFERENT RESULTS.....
  
```

These are 2 very simple programs which you can expand to do more difficult things. To get more information write to the STAR people and ask for the GEMINI USERS MANUAL.....

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MAINT BOX MAINT BOX

Here is a list of the most common Hardware problems & fixes...

1. Only trash on the screen after turning unit on.
 a. Usually due to bad power supply (broken wire in the connector on back of MPA-10 or bad voltage regulator (IC1 OR IC2) in the tape unit, or bad BASIC INTERPRETER)....
2. After hitting EN key only trash on screen.
 a. This is usually a bad memory chip in the MPA-10 and is usually fixed it by substitution. It can also be a bad "j" conn., or it can also be the same as 1.a. above.
3. The tape unit will not load or save.
 a. Most common failure is IC4 (4453) on the tape unit. Another failure is the "eject contact" switch on the AUDIO RECORD button, this switch will become sticky and will not open fully. It needs to be cleaned.

FROM SCOTT RICH

I called you about Wednesday and asked you about machine language. You told me to look up a bookstore called B DALTON, well, we do have a B DALTON bookstore...but...they don't have "6800 ASSEMBLY LANGUAGE" the lady told me they have a number of assembly language books for the Commodore Computers and she said they have 6800 assembly language 6800 assembly language 6800 assembly language. Could you write back and tell me which one of the books can I get? If neither of the books will work, will you buy one there and send it to me?

ANSWER.... No Scott, those other books are for an entirely different chip and won't help you working on your IM-1. Most bookstores are happy to order for their customers but if your local outlet doesn't do that then here is the address of the publisher.

OSBORNE & ASSOCIATES, P.O. BOX 2036, BERKELEY, CA. 94702
Ask for 6800 Assembly language programming, by Lance A. Leventhal.

What other functions does the "ESC" key have (do)??

ANSWER... The "ESC" key can be used with a printer or a modem to generate the character CHR\$(27). This is a special code used to control the functions of the printer.

Is there a monitor I can buy?

ANSWER.... AFF had a monitor at one time, but there don't seem to be any left. Most folks have been satisfied to connect their computer to a standard television set. We don't carry any monitors through the club.

FROM WE LOST THE NAME

I have a Gorilla Banana printer with a data length of 1 start bit, 8 data bits (fixed amount), no parity and a 1 or more stop bits. The AFF \$1-232 uses a 7 bit data word, even parity and 2 stop bits, is there any way I can modify one so they could be used together?

ANSWER.. First off you need to be sure that the printer cannot be changed to 7 bit. At this moment the only thing you could do is write a machine language program to use the printer.

FROM NAME LOST

Did you ever receive an order from the veterans administration medical center here in shville. The hospital has a couple of IM-1's used in nursing education and therapy departments. The computers at the VAMC are used by the patients as part of their therapy programs. I teach them how to program. I am a volunteer there volunteering my services thru the disabled American Veterans. Do possibly have any software available that would be useful in this program?

Right now there aren't any programs I know of that would work in your favor specifically for the rehabilitation of the veterans or the nurses except the basic tutor. But there might be some CLUBMEMBERS out there that could help you by writing some programs for the Veterans Center. If there ever was a worthy cause than it. GOOD LUCK

FROM H A MORGAN

My IM-1 package (RS-323, FI-100, RSK et.) has been a real pleasure. It works with an elderit Baudot teletype for a printer and receives ASCII from a receiver. It plays chess and backgammon (chess translated from an 8080 based machine ----Interact)

And until last week, it performed all basic chores. It no longer likes strings. Unless, of course, I change to another BASIC cartridge.

Nice thing about having TWO IM-1's is the redundancy factor beats the hell out of sending a malfunctioning machine for service.

In any event, my VERY elderly interpreter works in both machines.

The question is : since only ONE routine is out in the BASIC cartridge then either the 4K or the 8K ROM chip is bad---or (unlikely) a circuit board trace is open/shorted. In the latter case my FUNCTION/ROM tape check shall have shown "tilt".

QUESTION: Do you sell ROM chips separately?

QUESTION: How much does it cost to have my cartridge serviced assuming ONE bad ROM?

Note: All my computer equipment runs on 98 volts AC and massive "spike" protection. It is entirely removed from house wiring when not in use---and unplugged from the communication receiver.

ANSWER... Yes we do have the chips and they are \$14.95 each with no guarantee. If you send it to us it is \$29.95 +\$2.00 p&h to fix.

FROM GUY MILLER

As you have been requesting more input from the clubmembers, here is something that should have been included in my answer to your survey. Some of us out here are not computer experts, but bought the IM-1 and joined clubs to learn BASIC and as much as we are capable of learning. I feel that programs should be documented, with operating instructions where needed and REM statements to give us dummies an idea of what it is doing what in the program structure. While on the subject, I will qualify my le/switch cleaning tip. I specified freon TF as it is an electronic degreaser/solvent, made for the later TV tuners with plastic parts. Some of the tuner & pot cleaners are made with petroleum distillates which will melt plastics, and oil which is a residual that will collect dust and make it almost impossible to clean this type switch short of disassembly which is a chore on this type keyboard.

FROM DON SCHMIDT

Howdee Jim! Hi there Milly! Well this looks like the last time I may be writing to you, but I have some information I'd like to share with you and fellow clubmembers.

The enclosed program listing is yet another solution to the problem/question posed by Bill Bowman in the Sept. '83 issue of the newsletter (pg2), concerning the "loss" of data in disassembled variables. Your solutions are certainly workable for some, but not all IM-1 owners: 1) I don't have a disc drive unit; 2) there may be problems trying to read back from tape; 3) limited amount of space on low core. I have a solution which provides for use of all the space from the end of the program to the end of memory, regardless of how much memory a given machine has on it, whatever you have is what you get. You correctly pointed out that arrays are "shifted" in memory as program statements are added and/or deleted, so re-establish array pointers in the pointer table, it is necessary to "RUN" the program following any changes before it can be saved. Also, when a program following any changes before it can be saved. Thus "RUN" only clears the variables in the machine while the program is still resident (no power off or "reset"). If power is turned off or the "reset" button hit, and program reloaded, all simple variables in the program will be zero.

The pointers to the variables used by any program are not established until the initial "run" of the program and at the time the variable label is encountered. This is no real problem so long as the variable labels do not change with each invocation of the program. Hardly! So much for the minor details. On to the important part. What is critical is if a program is trying to use arrays to save data for reuse by the by the program is certain SYSTEM VARIABLE POINTERS. These pointers must be saved by the program before a "save" and restored after a "load" if it is to work at all. See lines 888-915 and 938-915. Also, the program required 2 simple variables to be able to execute following a "load" and "goto 75". These simple variables are saved in a small single area called "VS" and restored in the subroutine beginning at 888. See also lines 125 and 155.

The enclosed "VIDEO-BRAM" is based on the "letter program" submitted by Guy Miller of California some months ago. It was undertaken solely in an attempt to solve the above mentioned problem ----- and it does ----- and intended to be tailored by the individual user. The "printer setup" routine is a dummy to be filled in by users with printers, the "scroll/correction" routine has a minor bug in that sometimes it scrolls one line too many. The program function is to allow two or more APP owners to communicate, via tape and their computers WITH EACH OTHER AT THE SAME TIME SWAPPING PRGMS, notes or whatever.

As an example of its use I offer the following: "VIDEO-BRAM" is first copied to a single small tape, to be used as a "stub". Programs to be passed to another are loaded on a tape, starting at 20 the counter. When done, tape is rewound to 0 and removed. Next "stub" is loaded. RUN, write letter. "Stub" may be "saved" at this point if desired. Next, remove stub tape and insert rewind tape to be sent. Save to tape just inserted. You now have a letter, with program to send recipient, who can do the same thing.

PS IF CURSOR APPEARS BUT NO "OK" AFTER LOAD, type goto 75 anyway.....

FROM EDITOR... From the sounds of the above DDN has put a lot of research into the information. You will find the program he refers to listed in this newsletter. THANKS FOR THE INFO DON.....

FROM LARRY GRANNIS

I have a question, the answer to which you might include in the newsletter: Lewis Buldoc, in his article, and Mesmart Software, in their ad, both allude to a 34 track format for the disc drive; however, in my FI-100 instruction book it quite clearly states on page 5, "The Imagination Machine formats diskettes as follows: 34 tracks are formatted. Each with 8 sectors. Each sector contains 256 bytes of data. Total storage of a diskette is therefore 73,728 bytes." I understand from the Buldoc articles that Track 0, sectors 1 and 2 are set aside for FAT and Directory, but this is not the same as two whole tracks with 4K of storage!! What is this discrepancy?

ANSWER.. Sorry to say it but the FI-100 book is wrong. There are only 74 (0 to 33) tracks set up for use by the IM-1 with its DOS program.....

Perhaps some of the members might like to take advantage of a seemingly overlooked paragraph in the Technical Reference Manual in regard to cursor control. Many programs by the members which you have printed, and yourself, on page 2 of the February '82 issue program the following routine (A= the position and can be any ber from 512 to 1023 inclusive.)

```
10 POKE 40960,int(A/256)
20 POKE 40961,A-int(A/256)*256
```

This is apparently quite a common for many of the APP programs call for the same routine.

However, on page 1 of the chapter VI of the Reference Manual in the paragraph beginning "Line 25-" it is explained that into 40961 we have to POKE the remainder of dividing 256 into CV or A, in our example above. It says, "The POKE instructions AUTOMATICALLY does this". Therefore, instead of programming all of the mathematics in line 20 above, taking up unnecessary memory, one only has to program:

```
20 POKE 40961,A
```

Line 18 remains as is.-----Hope that might be of interest.

I'd like to be counted in the Lonely Computers group. I have an IM-1, BS-1, BK exp., SI-232, FI-100, and single drive. I have an employment service for programmers and analysts from mainframes to micros.

By the way, I have the Product Manual for the MPI-BS1 drive used by APP and it states on page 2-3, "The motor should be turned off if no activity is required... after 18 revolutions of the diskette. A minimum of 1.0 second is required before performing a read or write after a MOTOR ON command is transmitted to the device." So you may want to program a 1sec. delay loop:

```
10 POKE26112,4FORX=0TO120:NEXT
```

Thanks for the info LARRY

XX

Anyone wishing to contact Larry can reach him at:

1311 E. Washington Pl. #J-1

Santa Ana, Ca. 92701

FROM WILLIAM HOM

I would like to ask you about your assembly listings offered in the Sept issue of the newsletter. I presume that the more than 50 page listing is of the BASIC monitor, but I would like to know wheather every line is commented and wheather every or most referenced locations are labeled with mnemonic names.

ANSWER.. The listings are the original ASSEMBLY listings from APP and they have several comments which give reasonably good descriptions of the program.....

```

0 :SAVE AREA: AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
110 :
120 : VIDEO-GRAM (VER 1.3)
130 : BY DON SCHMIDT 9-28-83
140 :GOTO 75
150 :
160 R$= KEYS (0): IF R$="" THEN 30
170 RETURN
180 :
190 : CHANGE \ TO ,
200 BL= LEN (B$)
210 FOR B=0 TO BL
220 IF B$(B)="\" THEN B$(B)=", "
230 NEXT : RETURN
240 :
250 GOSUB 800: REM RE-SET SYS PTRS
260 POKE 24579,39: CALL 17846
270 :
280 IF R$="" THEN 115: REM STRT W/ RUN
290 PRINT "HIT 'P' FOR PRINTER OR 'V' FOR SCREEN VIEWING.": GOSUB 30
300 IF R$="P" THEN GOSUB 500: REM SET-UP FOR PRINTER.
310 GOTO 160
320 : GET HEADING DATA
330 POS 8197,50
340 INPUT "WHAT IS THE DATE",D$: PRINT
350 INPUT "HOW MANY LINES IN ADDRESS",H:VS(1)=H
360 :
370 FOR HL=1 TO H: PRINT "LINE#";HL;: INPUT T$(HL,0)
380 NEXT : PRINT NULL$
390 :
400 INPUT "SALUTATION",S$: PRINT NULL$
410 :
420 : GET LETTER
430 L=L+1:S$=NULL$: INPUT B$: IF B$="XXX" THEN 155
440 GOSUB 40:L$(L,0)=B$: GOTO 145
450 L=L-1:VS(2)=L
460 :
470 PRINT "EXPRESS 'R' TO REVIEW"
480 PRINT "PRESS 'S' TO SCROLL"
490 GOSUB 30
500 FOR B=40960.2: POKE 40961,0: CALL 17846
510 PRINT SPC (31)
520 PRINT TAB (16):"DON SCHMIDT"
530 PRINT TAB (16):"19 SCHMIDT HSE RD"
540 PRINT TAB (16):"NEPTUNE N.J."
550 PRINT TAB (16):"07753"
560 PRINT SPC (31): PRINT TAB (16):D$: PRINT SPC (31)
570 FOR HL=1 TO H: PRINT T$(HL,0)
580 NEXT : PRINT SPC (31)
590 PRINT B$: PRINT SPC (31)
600 :
610 FOR X=1 TO 700: NEXT : POKE 40960.2: POKE 40961,0: CALL 17846
620 PRINT SPC (31):X=2
630 FOR HL=1 TO L
640 IF L$(HL,0)="" THEN PRINT SPC (31): GOTO 290
650 IF R$="S" THEN GOSUB 400: GOTO 290
660 PRINT L$(HL,0)
670 X=X+1: IF LEN (L$(HL,0))>31 THEN X=X+1
680 IF X<14 THEN 290
690 PRINT "HIT ANY KEY FOR MORE"
700 M$= KEYS (0): IF M$="" THEN 10
710 CALL 17846: POKE 40960.2: POKE 40961,32:X=2
720 NEXT : FOR T=1 TO 700: NEXT
730 INPUT "TO CONT. LETTER HIT 'C', RET.Y",R$
740 IF R$="C" THEN GOTO 145
750 PRINT SPC (31): PRINT SPC (31)
760 PRINT TAB (15):"REGARDS,"
770 PRINT SPC (31): PRINT SPC (31)
780 PRINT TAB (15):"DON SCHMIDT"
790 STOP
800 PRINT "LINE#";HL;": : PRINT L$(HL,0)
810 INPUT "TO CHANGE LINE HIT 'C', RET.Y",R$
820 IF R$="C" THEN 450
830 B$=NULL$: INPUT B$: GOSUB 40:L$(HL,0)=B$
840 PRINT SPC (31):X=X+1
850 R$="S": RETURN

```

```

500 : ROUTINE TO SET-UP FOR PRINTER COMMANDS.
510 RETURN
520 :
530 : STOP
540 : RE-SET SYS PTRS
550 : POKE 48973, PEEK (42003): POKE 48974, PEEK (42004)
560 : POKE 48984, PEEK (42005): POKE 48985, PEEK (42006)
570 : POKE 41007, PEEK (42007): POKE 41008, PEEK (42008)
580 : RE-SETAB DIM PTRS
590 : DIM V$ (1): REM SIMPLE VARI SAV
600 H=V$ (1): L=V$ (2)
610 DIM B$ (1), M$ (1), D$ (9), S$ (20)
620 DIM B$ (63), NULL$ (63), L$ (40, 64), Y$ (4, 20)
630 RETURN
640 :
650 : SAVE SYS PTRS
660 : POKE 42003, PEEK (48973): POKE 42004, PEEK (48974)
670 : POKE 42005, PEEK (48984): POKE 42006, PEEK (48985)
680 : POKE 42007, PEEK (41007): POKE 42008, PEEK (41008)
690 :
700 : CALL 17046: PRINT
710 PRINT "8=1 V J D E O - G R A M 8=1": PRINT
720 PRINT " FROM DON SCHMIDT " : DS
730 PRINT " TO VIEW MESSAGE, ON OK TYPE "
740 PRINT " ENTER P TO PROMPT, LETTER "
750 PRINT " TO MAKE NEW LETTER, RUN AND "
760 PRINT " TO SAVE OR MAKE COPY OF THIS "
770 PRINT " TYPE "GOTO900". PGH WITH NEW "
780 : STOP
790 : CALL 34040: CALL 34130: CALL 34061

```

AFF IM-1 computer for sale
Includes: Pgm\tech ref. manual
Basic Tutor manual and tapes,
Newsletters from '82 till Dec
'83, tape with programs from
newsletters, Space Dist.,
3 home business tapes, & Music
Composer tape. Make an offer.
Send all bids to: Brian Aemis-
segger, Rt.2, Box 73,
Foristell, Mo., 63048.

Complete AFF system (all or
part), every expansion, manual
and piece of software made for
the AFF in one package & guar-
anteed to work. Best offer by
30 days after ad published.
Mike Russell, P.O. BOX 298465
Pullman, WA, (509-878-1714

24K memory expansion kit! Also
Building Blocks & Disc Inter-
face cartridges with 90 day
warranty! Send self-addressed
envelope for more info to:
Glenn Jones
419 S. 185 E P.),
Tulsa, OK 74128

WANT ADSS

I would like a tested file
program for cassette system.
also a 200 unit apartment
management program including:
heat, complaints, and problem
tenants. The tested file pgs.
should include a date variable.
Contact Ennet Jenkins.

For sale: IM-1 computer 16K
RAM & basic tutor, Prog\Tech
manual, Secrets, Bugger,
Casy, Starship, Primer,
Humbug II, Manuals, int-1
kit, --\$250, or best CDD
B. Kuczek, R45461,
L.L., N.M. 87031

FOR SALE: 32K AFF IM-1
computer factory pack. Bought
1 1/2 yrs ago and still in
excellent condition. Seller
needs money for college. Asking
\$280. or best offer.
Call 608-362-5908

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10 REM "MEMORY GAME BY DANNY LOUIE"
20 POKE 24578,30: CALL 17846
30 POKE 48960,2: POKE 48961,0
40 PRINT TAB (5): "M E M O R Y   G A M E   "
50 REM *** YOU DON'T HAVE TO TYPE IN THE INSTRUCTIONS.
60 REM *** BUT IT WILL MAKE THE PROGRAM LOOK NICER.
70 REM *** A COLOR TV IS RECOMMENDED, BUT A B/W WORKS TOO.
80 PRINT "IN THIS GAME, THE COMPUTER WILL RANDOMLY FLASH ON THE SCREEN "
90 PRINT "ONE OF THE NINE COLOR BOXES AND ITS NUMBER, ONE AT A TIME. YOU "
95 PRINT "YOU THEN TRY TO REPEAT THE PAT-  TERN BY PRESSING THE CORRECT "
100 PRINT "KEY ON THE LEFT JOYSTICK. IF  YOU ARE CORRECT, THE COMPUTER "
105 PRINT "WILL FLASH THE BOX AGAIN AND  ADD ANOTHER BOX. AS THE LENGTH "
110 PRINT "OF THE BOXES INCREASE, YOU WILL FIND THAT IT WILL BECOME MORE "
115 PRINT "DIFFICULT TO REMEMBER.                <PRESS RETURN> "
120 IF KEYS (0)="" THEN 120
125 CALL 17846: POKE 48960,2: POKE 48961,0
130 PRINT TAB (6): "M E M O R Y   G A M E   ": PRINT "
135 REM 32 SPACES.
140 PRINT "WHEN YOU HAVE CHOSEN THE WRONG BOX, YOU LOSE AND WILL BE ASKED"
145 PRINT "TO PLAY AGAIN. HOWEVER, IF YOU  HAVE SUCCESSFULLY REPEATED THE "
150 PRINT "PATTERN GIVEN BY THE COMPUTER,  AT 15 BOXES BEFORE YOU ARE DE- "
155 PRINT "FEATED, YOU GET A 'EXTRA LIFE,'  WITH THIS HELPFUL FEATURE, YOU "
160 PRINT "GET ANOTHER CHANCE TO FINISH UP  THE PATTERN. YOU WIN WHEN YOU "
165 PRINT "
170 IF KEYS (0)="" THEN 170
175 CALL 17846: POKE 48960,2: POKE 48961,0
180 PRINT TAB (6): "M E M O R Y   G A M E   "
190 REM *** RED BOX ***
200 FOR I=857 TO 873: POKE I,179: NEXT
210 FOR I=905 TO 965 STEP 32: POKE I,191: NEXT
220 FOR I=1008 TO 995 STEP -1: POKE I,188: NEXT
230 FOR I=962 TO 895 STEP -32: POKE I,191: NEXT
240 GOSUB 700
250 REM *** BLUE BOX ***
260 FOR I=877 TO 883: POKE I,163: NEXT
270 FOR I=915 TO 979 STEP 32: POKE I,175: NEXT
280 FOR I=1018 TO 1005 STEP -1: POKE I,172: NEXT
290 FOR I=972 TO 908 STEP -32: POKE I,175: NEXT
300 GOSUB 750
310 REM *** AQUA BOX ***
320 FOR I=887 TO 892: POKE I,211: NEXT
330 FOR I=925 TO 999 STEP 32: POKE I,223: NEXT
340 FOR I=1028 TO 1015 STEP -1: POKE I,220: NEXT
350 FOR I=982 TO 918 STEP -32: POKE I,223: NEXT
360 GOSUB 800
370 REM *** YELLOW BOX ***
380 FOR I=787 TO 713: POKE I,147: NEXT
390 FOR I=745 TO 809 STEP 32: POKE I,139: NEXT
400 FOR I=848 TO 825 STEP -1: POKE I,156: NEXT
410 FOR I=882 TO 758 STEP -32: POKE I,139: NEXT
420 GOSUB 850
430 REM *** GREEN BOX ***
440 FOR I=717 TO 722: POKE I,131: NEXT
450 FOR I=735 TO 819 STEP 32: POKE I,143: NEXT
460 FOR I=838 TO 845 STEP -1: POKE I,140: NEXT
470 FOR I=812 TO 738 STEP -32: POKE I,143: NEXT
480 GOSUB 900
490 REM *** WHITE BOX ***
500 FOR I=727 TO 732: POKE I,195: NEXT
510 FOR I=745 TO 809 STEP 32: POKE I,207: NEXT
520 FOR I=868 TO 955 STEP -1: POKE I,204: NEXT
530 FOR I=853 TO 758 STEP -32: POKE I,207: NEXT
540 GOSUB 950
550 REM *** PURPLE BOX ***
560 FOR I=617 TO 552: POKE I,227: NEXT
570 FOR I=605 TO 649 STEP 32: POKE I,229: NEXT
580 FOR I=688 TO 675 STEP -1: POKE I,226: NEXT
590 FOR I=642 TO 578 STEP -32: POKE I,229: NEXT
600 GOSUB 1000
610 REM *** AQUA BOX ***
620 FOR I=537 TO 562: POKE I,211: NEXT
630 FOR I=595 TO 659 STEP 32: POKE I,223: NEXT
640 FOR I=698 TO 685 STEP -1: POKE I,220: NEXT
650 FOR I=652 TO 588 STEP -32: POKE I,223: NEXT
660 GOSUB 1050
670 REM *** ORANGE BOX ***

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605 FOR I=567 TO 572: POKE I,243: NEXT
610 FOR I=605 TO 649 STEP 32: POKE I,255: NEXT
615 FOR I=708 TO 695 STEP -1: POKE I,252: NEXT
620 FOR I=665 TO 598 STEP -32: POKE I,255: NEXT
630 GOSUB 1150
640 MUSIC * 107050*10 50*10000*:X=100: GOSUB 1150: GOTO 1270
780 : AQUA '1' - RED CENTER
785 POKE 900,128: POKE 901,228: POKE 902,218: POKE 903,128
710 POKE 932,128: POKE 933,128: POKE 934,218: POKE 935,128
715 POKE 964,249: POKE 965,211: POKE 966,219: POKE 967,211
720 MUSIC *100*:X=25: GOSUB 1150
725 COLOR =3: HLIN 3,8,12
730 HLIN 3,8,13: HLIN 3,8,14
740 RETURN
750 : ORANGE '2' - BLUE CENTER
755 POKE 910,241: POKE 911,252: POKE 912,252: POKE 913,242
760 POKE 942,128: POKE 943,243: POKE 944,243: POKE 945,248
765 POKE 974,245: POKE 975,243: POKE 976,243: POKE 977,242
770 MUSIC *200*: GOSUB 1150
775 COLOR =3: HLIN 13,10,12
780 HLIN 13,10,13: HLIN 13,10,14
790 RETURN
800 : YELLOW '3' - AQUA CENTER
805 POKE 920,148: POKE 921,156: POKE 922,156: POKE 923,146
810 POKE 952,128: POKE 953,156: POKE 954,156: POKE 955,146
815 POKE 984,145: POKE 985,147: POKE 986,147: POKE 987,152
820 MUSIC *180*: GOSUB 1150
825 COLOR =8: HLIN 23,28,12
830 HLIN 23,28,13: HLIN 23,28,14
835 COLOR =8: HLIN 23,28,12
840 RETURN
850 : GREEN '4' - YELLOW CENTER
855 POKE 740,133: POKE 741,128: POKE 742,129: POKE 743,128
860 POKE 772,133: POKE 773,134: POKE 774,135: POKE 775,130
865 POKE 804,128: POKE 805,128: POKE 806,133: POKE 807,128
870 MUSIC *400*: GOSUB 1150
875 COLOR =1: HLIN 3,8,7
880 HLIN 3,8,8: HLIN 3,8,9
890 RETURN
900 : WHITE '5' - GREEN CENTER
905 POKE 750,197: POKE 751,204: POKE 752,204: POKE 753,200
910 POKE 782,196: POKE 783,204: POKE 784,204: POKE 785,194
915 POKE 814,193: POKE 815,195: POKE 816,195: POKE 817,200
920 MUSIC *380*: GOSUB 1150
925 COLOR =8: HLIN 13,18,7
930 HLIN 13,18,8: HLIN 13,18,9
940 RETURN
950 : PURPLE '6' - WHITE CENTER
955 POKE 760,128: POKE 761,238: POKE 762,236: POKE 763,128
960 POKE 792,229: POKE 793,235: POKE 794,235: POKE 795,236
965 POKE 824,228: POKE 825,235: POKE 826,237: POKE 827,235
970 MUSIC *600*: GOSUB 1150
975 COLOR =4: HLIN 23,28,7
980 HLIN 23,28,8: HLIN 23,28,9
990 RETURN
1000 : ORANGE '7' - PURPLE CENTER
1005 POKE 580,244: POKE 581,252: POKE 582,252: POKE 583,250
1010 POKE 612,128: POKE 613,129: POKE 614,246: POKE 615,128
1015 POKE 644,128: POKE 645,246: POKE 646,128: POKE 647,128
1020 MUSIC *700*: GOSUB 1150
1025 COLOR =6: HLIN 3,8,2
1030 HLIN 3,8,3: HLIN 3,8,4
1040 RETURN
1050 : RED '8' - AQUA CENTER
1055 POKE 590,177: POKE 591,188: POKE 592,188: POKE 593,178
1060 POKE 622,177: POKE 623,188: POKE 624,188: POKE 625,178
1065 POKE 654,180: POKE 655,179: POKE 656,179: POKE 657,184
1070 MUSIC *100*: GOSUB 1150
1075 COLOR =5: HLIN 13,18,2
1080 HLIN 13,18,3: HLIN 13,18,4
1090 RETURN
1100 : BLUE '9' - ORANGE CENTER
1105 POKE 600,161: POKE 601,172: POKE 602,172: POKE 603,162
1110 POKE 632,164: POKE 633,163: POKE 634,163: POKE 635,170
1115 POKE 664,160: POKE 665,158: POKE 666,158: POKE 667,170
1120 MUSIC *200*: GOSUB 1150

```

```

1 REM HERE IS A FUN PROGRAM
2 SHAPE = "C"
3 FOR I=0 TO 7
4   COLOR = I
5   CALL 17844
6   H=I*8:G=20.8
7   GOTO 60
8   CALL 17844
9   MUSIC = "2888 "
10  COLOR = I+1
11  H=I*8:G=20.8
12  MUSIC = "3888 "
13  COLOR = I+2
14  H=I*8:G=10.12
15  GOTO 180
16  MUSIC = "1888 "
17  COLOR = I+5
18  H=I*8:G=17.14
19  MUSIC = "2888 "
20  GOTO 120
21  COLOR = I+4
22  CALL 17844
23  H=I*8:G=10.12
24  GOTO 140
25  MUSIC = "28888888 "

```

145	NEXT I
147	CALL 17046
150	MUSIC "12"
160	COLOR = 1+1
170	HLIN 10,20.4
180	CALL 17046
190	MUSIC "3"
200	COLOR = 1+2
210	HLIN 10,20.6
220	CALL 17046
230	MUSIC "1"
240	HLIN 6,10.6
250	CALL 17046
260	MUSIC "7/18"
270	COLOR = 1
280	HLIN 19,20.14
290	MUSIC "/C081"
300	COLOR = 0.4
310	HLIN 20,30.12
320	CALL 17046
330	GOTO 150

```

1 REM HERE IS AN AMORTIZATION PROGRAM SUBMITTED BY
2 REM BILL BOWMAN
3 POKE 24578,38: POKE 8193,68
4 DIM S%(1)
5 COLOR =6: SHAPE =4
6 GOSUB 500:CU=600: GOSUB 600
7 PRINT SPC (6): "MORTGAGE AMORTIZATION"
8 PRINT : PRINT SPC (3): "1-PER THOUSAND RATE KNOWN"
9 PRINT : PRINT SPC (3): "2-MONTHLY PAYMENT KNOWN"
10 HLIN 1: "0 1: HLIN 1: "0 1:
11 VLIN 1: "0 1: VLIN 1: "0 1:
12 CU=600: GOSUB 600: PRINT "SEE TOT.AFTER ANY MONTH"
13 PRINT SPC (12): IF 1-PRESS BREAK: GOTO 281
14 PRINT SPC (3): IF 2-PRESS BREAK: GOTO 432
15 INPUT " SELECT (1-2) ",S
16 ON S GOTO 110,210
17 GOSUB 500:CU=512: GOSUB 600
18 INPUT "PRINCIPLE $ AMOUNT",P
19 J=P
20 INPUT "INTEREST (%)",O
21 INPUT "NO. OF YEARS",T
22 INPUT "M.A.R. (%) PER THOUSAND",M
23 GOSUB 500:CU=512: GOSUB 600
24 PRINT " ANY KEY TO START"
25 N=P/1000
26 FOR L=1 TO T*12
27 K= KEY$ (0): IF K="" THEN 145
28 A=P*O/1200
29 B=M*N
30 C=B-A
31 PRINT L: SPC (1):A: SPC (2):C: SPC (2):B
32 P=P-C
33 X=X+A
34 Z=Z-B
35 Y=Y+C: NEXT
36 PRINT "ANY KEY TO SEE TOTALS"
37 IF KEY$ (0)="" THEN 276
38 GOSUB 500
39 CU=512: GOSUB 600
40 PRINT "TOTALS FOR": SPC (1):L-1: SPC (1): "MONTHS:--"
41 PRINT
42 PRINT "INTEREST $ ": SPC (1):X
43 PRINT "PRINCIPLE $ ": SPC (1):Y
44 PRINT "TOTAL $ ": SPC (1):Y: IF L-1<T*12 THEN PRINT "PRINCIPLE SALA
45 ": SPC (1):Y: STOP
46 IF Y>J THEN PRINT "PRINCIPLE OVERPAID..ADJUST"
47 IF Y<J THEN PRINT "PRINCIPLE UNDERPAID..ADJUST"
48 IF Y=J THEN STOP
49 REM : ADJUST FOR OVER/UNDER PAY ON PRINCIPLE
50 IF Y>J THEN X=X-Y:Y=Y-K: X=X-K
51 IF Y<J THEN K=J-Y:Y=Y+K: X=X-K
52 PRINT : PRINT "FINAL MO.ADJUSTED TOTALS ARE:--"
53 PRINT : PRINT "TOTAL INTEREST $": SPC (1):X
54 PRINT "TOTAL PRINCIPLE $": SPC (1):Y
55 NT=X+Y
56 PRINT "TOTAL $": SPC (1):NT
57 STOP
58 GOSUB 500:CU=512: GOSUB 600
59 INPUT "PRINCIPLE ($) AMOUNT",P
60 J=P
61 INPUT "INTEREST (%)",O
62 INPUT "NO. OF YEARS",T
63 INPUT "MO. PAYMENT ($)",Q
64 GOSUB 500:CU=512: GOSUB 600
65 PRINT "USE SPACE BAR TO START/STOP"
66 FOR L=1 TO T*12
67 K= KEY$ (0): IF K="" THEN 358
68 A=P*O/1200
69 B=Q-A
70 C=A+B
71 PRINT L: SPC (1):A: SPC (2):B: SPC (2):C

```

```

415 P=P-B
420 X=X+A:Y=Y+B:Z=Z+C
425 NEXT
430 PRINT "ANY KEY TO SEE TOTALS"
431 IF "EYS (S)"="" THEN 431
432 GOSUB 500:CU=512: GOSUB 600
433 PRINT "TOTALS FOR": SPC (1):L-1: SPC (1):"MONTHS:--"
436 PRINT : PRINT "INTEREST": SPC (1):X
440 PRINT "PRINCIPLE": SPC (1):Y
445 PRINT "TOTAL $": SPC (1):Y: IF L-1<12 THEN PRINT : PRINT "PRINCIPLE BALA
NCE": SPC (1):J-Y: STOP
446 REM :ADJUST FOR OVER/UNDER PAY ON PRINCIPLE
447 IF V>J THEN PRINT "PRINCIPLE OVERPAID--ADJUST"
448 IF V<J THEN PRINT "PRINCIPLE UNDERPAID--ADJUST"
449 IF V=J THEN GOTO 476
450 IF V>J THEN M=Y-J:Y=Y-M:K=X+K
451 IF V<J THEN M=J-V:Y=Y+M:K=X-K
452 Z=X+Y
453 PRINT : PRINT "WITH FINAL MONTH ADJUSTMENT:--"
454 PRINT "TOTAL INTEREST": X
455 PRINT "TOTAL PRINCIPLE": Y
456 PRINT "TOTAL PAID": Z
457 PRINT "WITH THE FACTS AS GIVEN ...THE": PRINT "A.R.PER "K" WOULD BE $:C/(Y
/1000)
458 STOP
459 FOR I=1 TO 16: PRINT SPC (32): NEXT I
460 RETURN
461 POKE 40960, INT (CU/256): POKE 40961,CU-( INT (CU/256)*256)
462 RETURN

```

0 REM /RANDOM MUSIC PROGRAM SUBMITTED BY JIM RITTIS

```

10 MUSIC "/6": GOTO 20
15 MUSIC "7"
20 Z= INT ( RND (0)*18)
25 POKE 24578,54: CALL 34061: CALL 17346
30 IF Z<7 THEN POKE 41990,47: POKE 41991,(Z+49): GOTO 10
40 IF Z<13 THEN Z=Z-6: POKE 42000,(Z+49): GOTO 15
50 Z=Z-12: POKE 41990,42: POKE 41991,(Z+49)
60 GOTO 10
3000 POKE 40960,0: POKE 40961,0
3010 PRINT "***** THIS TAPE CONTAINS 4 PROG-* * R
AMS:
3040 PRINT " * 'RUN'= RANDOM MUSIC * * 'GOTO 5000'= WRITE INTRO * *
SCREEN
3070 PRINT " * 'GOTO 6000'= READ INTRO * * SCREEN FOR PROOF * *
'GOTO 9000'= LIST ENTIRE *"
3100 PRINT " * USER PROGRAM WITH CONTROL * * OF THE SCROLLING WITH THE * *
SPACE BAR *"
3130 PRINT " * THE * GOTO 5000' IS MORE OF * * AN EXAMPLE OF HOW TO.... * *
5160 PRINT "*****"
5200 POKE 41452,255
5250 STOP
5299
6000 FOR N=0 TO 511: POKE 512+N,( PEEK (N)): NEXT
6001 STOP
9000 N=0:M=0:L=0
9002 L=( PEEK (41986+N))/16:L= INT (L)*10+(L- INT (L))*16:L=L*100
9004 M=( PEEK (41987+N))/16:M= INT (M)*10+(M- INT (M))*16:M=M+L
9006 PRINT : PRINT M:N=N+2
9008 IF PEEK (41986+N)=13 THEN N=N+1: PRINT : GOTO 9002
9010 PRINT CHR$ ( PEEK (41986+N)):
9012 IF "EYS (S)"="" THEN 9012
9014 N=N+1: GOTO 9008

```

```

100 CALL 17045
101 FCKE 24578,32
102 DIM KEYS (5)
103 DIM S$(3)
104 DIM C$(10) : DIM D$(10)
105 DIM A$(50,3)
106 A$(1,1)="HA"
107 A$(2,1)="HI"
108 A$(3,1)="LO"
109 A$(4,1)="H4"
110 A$(5,1)="H5"
111 A$(6,1)="H6"
112 A$(7,1)="H7"
113 A$(8,1)="H8"
114 A$(9,1)="H9"
115 A$(10,1)="H10"
116 A$(11,1)="H11"
117 A$(12,1)="H12"
118 A$(13,1)="H13"
119 A$(14,1)="H14"
120 A$(15,1)="H15"
121 A$(16,1)="H16"
122 A$(17,1)="H17"
123 A$(18,1)="H18"
124 A$(19,1)="H19"
125 A$(20,1)="H20"
126 A$(21,1)="H21"
127 A$(22,1)="H22"
128 A$(23,1)="H23"
129 A$(24,1)="H24"
130 A$(25,1)="H25"
131 A$(26,1)="H26"
132 A$(27,1)="H27"
133 A$(28,1)="H28"
134 A$(29,1)="H29"
135 A$(30,1)="H30"
136 A$(31,1)="H31"
137 A$(32,1)="H32"
138 A$(33,1)="H33"
139 A$(34,1)="H34"
140 A$(35,1)="H35"
141 A$(36,1)="H36"
142 A$(37,1)="H37"
143 A$(38,1)="H38"
144 A$(39,1)="H39"
145 A$(40,1)="H40"
146 A$(41,1)="H41"
147 A$(42,1)="H42"
148 A$(43,1)="H43"
149 A$(44,1)="H44"
150 A$(45,1)="H45"
151 A$(46,1)="H46"
152 A$(47,1)="H47"
153 A$(48,1)="H48"
154 A$(49,1)="H49"
155 A$(50,1)="H50"
156 A$(51,1)="CO"
157 A$(52,1)="CK"
158 PRINT " *BLACK*JACK* "
159 PRINT : PRINT : PRINT : PRINT : PRINT : PRINT : PRINT " BY
160 PRINT : PRINT : PRINT " J. ALEX DRAUGHON "
161 PRINT : PRINT : PRINT
162 FOR I=1 TO 550: NEXT I
163 GOSUB 1000
164 CALL 17045
165 INPUT "ENTER THE NAME OF PLAYER #1: ",C$
166 INPUT "ENTER THE NAME OF PLAYER #2: ",D$
167 CALL 17045
168 PRINT "DO YOU REQUIRE INSTRUCTIONS?????"
169 INPUT B$
170 IF B$="NO" THEN 200
171 IF B$="YES" THEN 160
172 PRINT "PLEASE ANSWER 'YES' OR 'NO'....": GOTO 152
173 CALL 17045
174 PRINT : PRINT

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170 PRINT : PRINT "INSTRUCTIONS"
171 PRINT "THE SUITES ARE REPRESENTED AS FOLLOWS: S = SPADES"
172 PRINT "H = HEARTS C = CLUBS"
173 PRINT "D = DIAMONDS"
174 PRINT : PRINT "THE CARD NUMBERS ARE IN NUMERIC FORM WITH THE FOLLOWING
EXCEPTIONS:
175 PRINT "A = ACE, J = JACK, Q = QUEEN K = KING
176 PRINT "EXAMPLES: HA=ACE OF HEARTS"
S10=10 OF SPADES
180 INPUT "PRESS ANY KEY TO CONTINUE" ; B
181 CALL 17046
182 PRINT C$ " WILL USE THE LEFT CONTROL"
183 PRINT D$ " WILL USE THE RIGHT CONTROL"
184 PRINT : PRINT "PRESS THE 'FIRE' BUTTON FOR A HIT."
185 PRINT "PRESS THE 'CLEAR' KEY IF YOU WANT TO STAND."
186 PRINT "THE 'FIRE' BUTTON WILL ALSO RE- SET THE GAME AT THE END."
187 PRINT : PRINT
189 INPUT "PRESS ANY KEY TO CONTINUE" ; B
190 CALL 17046
191 REM
192 CALL 17046
193 L=0
194 PRINT C$ : SPC (16); D$
X= RND (10)
U= RND (10)
V=U*100: IF V>52 GOTO 211
IF V.1 THEN 211
IF A$(V.1)="0" THEN 211
Y=X*100: IF Y>52 GOTO 210
IF Y.1 GOTO 210
IF A$(Y.1)="0" THEN 210
IF V=X THEN 210
IF L>0 THEN PRINT A$(Y.1);A$(Y.1)="0": GOTO 300
IF M>0 THEN PRINT : SPC (22); A$(V.1);A$(V.1)="0": GOTO 320
PRINT A$(Y.1); A$(V.1); A$(V.1)
A$(V.1)="0"
A$(Y.1)="0"
N=N+1
IF N=2 THEN 300
GOTO 210
N=0
PRINT "HIT"
B$=KEY$(2): IF B$="" THEN 311
IF B$="" THEN L=L+1: GOTO 210
L=0: PRINT "HIT?"
B$=KEY$(1): IF B$="" THEN 321
IF B$="" THEN M=M+1: GOTO 210
CALL 17046
PRINT "WOULD YOU LIKE TO TRY AGAIN???"
B$=KEY$(2): IF B$="" THEN 370
IF B$="" THEN CALL 17046: GOTO 200
CALL 17046: PRINT "NO?? OH WELL..."
PRINT : PRINT
PRINT "THIS IS YOUR BLACK*JACK* COMPUTER PROGRAM SAYING 'GOOD- BYE
FOR NOW"
381 PRINT : PRINT : PRINT : PRINT : PRINT : PRINT "THE END"

382 GOTO 388
1000 CALL 17046
1002 SHAPE=15: COLOR=0
1004 COLOR=4: FOR I=9 TO 1: HLINE 4,12,I: HLINE 18,26,I: NEXT I
1006 COLOR=3: HLINE 4,12,4: HLINE 4,12,12: VLINE 5,11,3: VLINE 5,11,13: SHAPE=7:
PLOT 3,4: SHAPE=11: PLOT 13,4: SHAPE=13: PLOT 3,12: SHAPE=14
1100 PLOT 17,12: COLOR=2: PLOT 27,12: SHAPE=15: HLINE 18,26,4: HLINE 18,26,12:
VLINE 5,11,17: VLINE 5,11,27: SHAPE=11: PLOT 27,4
1110 SHAPE=7: PLOT 17,4: SHAPE=13: PLOT 17,12
1140 COLOR=0: FOR I=6 TO 8: PLOT 16,I: PLOT 9,I: PLOT I,18: NEXT I: PLOT 6,7: P
LOT 6,9: PLOT 8,7: PLOT 9,7: PLOT 8,9: PLOT 9,9
1180 HLINE 28,23,6: VLINE 6,18,22: HLINE 28,22,18: PLOT 28,9
2000 PRINT "BLACK*JACK*BLACK*JACK*BLACK*JACK*": PRINT : PRINT
2010 FOR I=1 TO 400: NEXT I
2300 RETURN

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0 CALL 17844: PRINT : PRINT : PRINT
1 PRINT : PRINT *STATE*CAPITALS*
2 PRINT : PRINT : PRINT : PRINT : PRINT "
3 PRINT : PRINT : PRINT : J. ALEX. WRAUGHON "BY "
4 PRINT : PRINT : FOR I=1 TO 50: NEXT I
5 POKE 24578,32
6 DIM A$(15)
7 CALL 17846
8 PRINT "ENTER THE NAME OF A STATE SO " : PRINT "THAT I CAN TELL YOU ITS CAPI
9 TAL : INPUT A$
10 CALL 17844
11 IF A$="DISTRICT OF COLUMBIA" THEN GOTO 600
12 IF A$="WYOMING" THEN GOTO 590
13 IF A$="WASHINGTON D.C." THEN GOTO 600
14 IF A$="PUERTO RICO" THEN GOTO 610
15 IF A$="OREGON" THEN GOTO 580
16 IF A$="PENNSYLVANIA" THEN GOTO 510
17 IF A$="SOUTH CAROLINA" THEN GOTO 520
18 IF A$="TENNESSEE" THEN GOTO 530
19 IF A$="TEXAS" THEN GOTO 540
20 IF A$="VIRGINIA" THEN GOTO 550
21 IF A$="WASHINGTON" THEN GOTO 560
22 IF A$="WEST VIRGINIA" THEN GOTO 570
23 IF A$="WISCONSIN" THEN GOTO 580
24 IF A$="ALABAMA" THEN GOTO 104
25 IF A$="ALASKA" THEN GOTO 110
26 IF A$="ARIZONA" THEN GOTO 120
27 IF A$="ARIZONA" THEN GOTO 130
28 IF A$="CALIFORNIA" THEN GOTO 140
29 IF A$="NEW MEXICO" THEN GOTO 150
30 IF A$="COLORADO" THEN GOTO 160
31 IF A$="CONNECTICUT" THEN GOTO 170
32 IF A$="RHODE ISLAND" THEN GOTO 180
33 IF A$="DELAWARE" THEN GOTO 190
34 IF A$="MARYLAND" THEN GOTO 200
35 IF A$="FLORIDA" THEN GOTO 210
36 IF A$="GEORGIA" THEN GOTO 220
37 IF A$="HAWAII" THEN GOTO 230
38 IF A$="IDAHO" THEN GOTO 240
39 IF A$="ILLINOIS" THEN GOTO 250
40 IF A$="INDIANA" THEN GOTO 260
41 IF A$="IOWA" THEN GOTO 270
42 IF A$="KANSAS" THEN GOTO 280
43 IF A$="KENTUCKY" THEN GOTO 290
44 IF A$="LOUISIANA" THEN GOTO 300
45 IF A$="MAINE" THEN GOTO 310
46 IF A$="MASSACHUSETTS" THEN GOTO 320
47 IF A$="MICHIGAN" THEN GOTO 330
48 IF A$="MINNESOTA" THEN GOTO 340
49 IF A$="MISSISSIPPI" THEN GOTO 350
50 IF A$="MISSOURI" THEN GOTO 360
51 IF A$="MONTANA" THEN GOTO 370
52 IF A$="NEBRASKA" THEN GOTO 380
53 IF A$="NEVADA" THEN GOTO 390
54 IF A$="UTAH" THEN GOTO 400
55 IF A$="NEW HAMPSHIRE" THEN GOTO 410
56 IF A$="VERMONT" THEN GOTO 420
57 IF A$="NEW JERSEY" THEN GOTO 430
58 IF A$="NEW YORK" THEN GOTO 440
59 IF A$="NORTH CAROLINA" THEN GOTO 450
60 IF A$="NORTH DAKOTA" THEN GOTO 460
61 IF A$="SOUTH DAKOTA" THEN GOTO 470
62 IF A$="OHIO" THEN GOTO 480
63 IF A$="CLARKMA" THEN GOTO 490
64 PRINT "I'M SORRY, BUT YOU EITHER MADE A MISTAKE IN SPELLING OR DID NOT TYP
65 IN THE NAME OF A STATE": FOR L=1 TO 500
66 NEXT L: GOTO 10
67 PRINT "THE CAPITAL IS MONTGOMERY "
68 GOTO 5000
69 PRINT "THE CAPITAL IS JUNEAU "
70 GOTO 5000
71 PRINT "THE CAPITAL IS LITTLE ROCK "
72 GOTO 5000
73 PRINT "THE CAPITAL IS PHOENIX "
74 GOTO 5000
75 PRINT "THE CAPITAL IS SACRAMENTO "
76 GOTO 5000
77 PRINT "THE CAPITAL IS SANTA FE "
78 GOTO 5000
79 PRINT "THE CAPITAL IS DENVER "

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165 GOTO 5000
170 PRINT " THE CAPITAL IS HARTFORD "
175 GOTO 5000
180 PRINT "THE CAPITAL IS PROVIDENCE "
185 GOTO 5000
190 PRINT "THE CAPITAL IS DOVER"
195 GOTO 5000
200 PRINT "THE CAPITAL IS ANNAPOLIS"
205 GOTO 5000
210 PRINT "THE CAPITAL IS TALLAHASSEE"
215 GOTO 5000
220 PRINT " THE CAPITAL IS ATLANTA "
225 GOTO 5000
230 PRINT "THE CAPITAL IS HONOLULU"
235 GOTO 5000
240 PRINT " THE CAPITAL IS BOISE"
245 GOTO 5000
250 PRINT " THE CAPITAL IS SPRINGFIELD"
255 GOTO 5000
260 PRINT " THE CAPITAL IS INDIANAPOLIS"
265 GOTO 5000
270 PRINT "THE CAPITAL IS DES MOINES "
275 GOTO 5000
280 PRINT "THE CAPITAL IS TOPEKA"
285 GOTO 5000
290 PRINT "THE CAPITAL IS FRANKFORT"
295 GOTO 5000
300 PRINT " THE CAPITAL IS BATON ROUGE "
305 GOTO 5000
310 PRINT " THE CAPITAL IS AUGUSTA "
315 GOTO 5000
320 PRINT " THE CAPITAL IS BOSTON"
325 GOTO 5000
330 PRINT " THE CAPITAL IS LANSING"
335 GOTO 5000
340 PRINT "THE CAPITAL IS SAINT PAUL"
345 GOTO 5000
350 PRINT " THE CAPITAL IS JACKSON"
355 GOTO 5000
360 PRINT " THE CAPITAL IS JEFFERSON CITY "
365 GOTO 5000
370 PRINT " THE CAPITAL IS HELENA"
375 GOTO 5000
380 PRINT "THE CAPITAL IS LINCOLN"
385 GOTO 5000
390 PRINT "THE CAPITAL IS CARSON CITY "
395 GOTO 5000
400 PRINT " THE CAPITAL IS SALT LAKE CITY "
405 GOTO 5000
410 PRINT " THE CAPITAL IS CONCORD"
415 GOTO 5000
420 PRINT "THE CAPITAL IS MONTPELIER"
425 GOTO 5000
430 PRINT "THE CAPITAL IS TRENTON"
435 GOTO 5000
440 PRINT "THE CAPITAL IS ALBANY"
445 GOTO 5000
450 PRINT "THE CAPITAL IS RALEIGH"
455 GOTO 5000
460 PRINT " THE CAPITAL IS BISMARCK"
465 GOTO 5000
470 PRINT " THE CAPITAL IS PIERRE"
475 GOTO 5000
480 PRINT "THE CAPITAL IS COLUMBUS"
485 GOTO 5000
490 PRINT " THE CAPITAL IS OKLAHOMA CITY "
495 GOTO 5000
500 PRINT "THE CAPITAL IS SALEN"
505 GOTO 5000
510 PRINT " THE CAPITAL IS HARRISBURG"
515 GOTO 5000
520 PRINT "THE CAPITAL IS COLUMBIA"
525 GOTO 5000
530 PRINT "THE CAPITAL IS NASHVILLE"
535 GOTO 5000
540 PRINT " THE CAPITAL IS AUSTIN"
545 GOTO 5000
550 PRINT " THE CAPITAL IS RICHMOND"
```



```
555 GOTO 5000
560 PRINT "THE CAPITAL IS OLYMPIA"
565 GOTO 5000
570 PRINT "THE CAPITAL IS CHARLESTON"
575 GOTO 5000
580 PRINT "THE CAPITAL IS MADISON"
585 GOTO 5000
590 PRINT "THE CAPITAL IS CHEYENNE"
595 GOTO 5000
600 PRINT "THE CAPITAL IS ANNAPOLIS"
605 GOTO 5000
610 PRINT "THE CAPITAL IS SAN JUAN"
615 GOTO 5000
620 GOTO 5000
625 PRINT "PRESS 'RETURN' TO CONTINUE"
630 GOTO 10
```

*: INPUT Z

```
1 REM STROBE PROGRAM SUBMITTED BY DANIEL TAYLOR. CHANGE LINE 70 TO GOTO 10 F
OR INTERESTING EFFECT.
5 CALL 170-15
10 X=INT(1/RND(8)*5+1)
20 IF X=5 THEN COLOR=4
30 IF X=6 THEN COLOR=5
40 IF X=9 THEN COLOR=1
50 SHAPE=X
60 HLIN X,31,X
64 Y=INT(1/RND(8)*32+1)
65 VLIN X,15,Y
70 GOTO 5
```

PROGRAMS IN REVIEW.

First on the list is EDDIE BEDNAR'S Here is a handful of games for everybody. ---The prices are right and make great stocking stuffers

John Michaelas has a dandy "censpede" game for us this year. ==High res graphics, Color, Lotsa action== Makes for some good scores for all on this version.

Russ Needham has delivered two programs that should not be missed by anyone with children from five to 12. "spellbinder" is a novel and fun way to help with spelling and "safari in Africa" is an action adventure game. Your kids won't know they're practicing reading skills till you tell them.---This is the IM-1 at it's finest as a teaching tool for little programmers.

~~~~~

LONELY MEMBERS

David Alger  
RR1 BOX 234A  
Carbon In, 47827  
Phone 317-672-4652  
Presently on robotics  
committee for ARCO  
symposium. Programming  
in BASIC for several  
years learning assylang.  
Interested in C.A.I.  
Believe that IM-1 is  
tops for purpose.  
16K with disc. Rommon.  
3level II BASIC.

Emmet Jenkins  
P.O. BOX 1302  
BRONX, N.Y. 10452  
I love science fiction  
and related literatures  
Sci. Popular Science,  
almost all computer  
magazines, and fat women'

```

10 CALL 17846
20 POKE 24575,32
21 PRINT "          MERRY CHRISTMAS          "
22 PRINT "          BY          "
23 PRINT "          J. ALEX DRAUGHDON          "
24 FOR I=1 TO 550: NEXT I
25 CALL 17846
30 COLOR =4: SHAPE =15
40 FOR I=11 TO 15
50   HLIN 0,71,1
60 NEXT I
70
80 COLOR =6: HLIN 13,17,13: HLIN 14,16,14
90 COLOR =3: PLOT 15,12
100 COLOR =8
110   HLIN 11,19,11
120   HLIN 12,18,12
130   HLIN 13,17,13
140   HLIN 14,16,14
150   HLIN 15,15,15
160 SHAPE =12: COLOR =1
170 HLIN 28,28,4
180 SHAPE =1: PLOT 19,3
190 COLOR =3
200 SHAPE =11: PLOT 21,3: SHAPE =3: PLOT 22,3: PLOT 23,3: SHAPE =15: PLOT 24,3:
210 PLOT 24,2: COLOR =4: PLOT 24,1
220 COLOR =3: SHAPE =7: PLOT 24,0
230 COLOR =7: SHAPE =15: HLIN 26,28,3: PLOT 27,2: SHAPE =1: PLOT 26,2: SHAPE =2:
240 PLOT 28,2: SHAPE =1: PLOT 26,1: SHAPE =2: PLOT 27,1
250 COLOR =1
260 SHAPE =3: PLOT 16,2: PLOT 17,2: SHAPE =6: PLOT 14,3: SHAPE =2: PLOT 15,3: S
270 SHAPE =1: PLOT 16,3: SHAPE =9: PLOT 17,3
280 SHAPE =6: PLOT 14,2: SHAPE =3: PLOT 15,1: SHAPE =4: PLOT 13,2: SHAPE =2: PL
290 13,1
300 SHAPE =3: PLOT 15,2
310 HLIN 7,9,2: SHAPE =6: PLOT 9,3: PLOT 6,3: SHAPE =2: PLOT 7,3: PLOT 10,3: SH
320 =11: PLOT 6,2: SHAPE =9: PLOT 5,1: SHAPE =1: PLOT 4,1
330 SHAPE =8: PLOT 7,1: COLOR =7: SHAPE =1: PLOT 5,2
340 COLOR =3: SHAPE =3: PLOT 2,2
350 COLOR =4: SHAPE =1: PLOT 2,2
360 POKE 714,13: POKE 715,5: POKE 716,18: POKE 717,18: POKE 718,25
370 POKE 720,3: POKE 721,6: POKE 722,18: POKE 723,9: POKE 724,19: POKE 725,20:
380 POKE 726,13: POKE 727,11: POKE 728,19
390 GOTO 310

```

```

1 REM      BATTLE OF NUMBERS ...BY D ON      SCHMIDT
20 SOSUB 20: CALL 17846
30 A= INT ( (RND (0)*15+7)): REM  ARBITRARY
40 B= INT ( (RND (0)*37+41)): REM  ARBITRARY
50 PRINT "INTERVAL IS 1 TO "A: PRINT
60 PRINT "STARTING TOTAL IS "B: PRINT
70
80 INPUT "YOU GO "P
90 IF INT (P)/P THEN 100
100 IF INT ((P-1)/A)<0 THEN 100
110 IF P=0 THEN 100
120 IF P<B THEN 110
130 PRINT "ILLEGAL NUMBER": GOTO 60
140 B=B-P: IF B=0 THEN PRINT "*** I WIN***": GOTO 200
150 I= INT ((B-1)/(A+1))
160 C=B-(I*(A+1)/(A+1))
170 IF C=0 THEN 170
180 C= INT (RND (0)*A+1)
190 IF B<C THEN 150
200 B=B-C: PRINT "I TAKE "C
210 IF B=0 THEN PRINT "*** YOU WIN***": GOTO 200
220 PRINT "LEAVING A TOTAL OF "B: GOTO 60
230 INPUT "ANOTHER BATTLE? (Y=1 N=0),P: IF P=1 THEN 20
240 END
250 INPUT "DO YOU KNOW THE RULES? (Y=1,N=0)",P: IF P=1 THEN RETURN
260 PRINT "WE TAKE TURNS SUBTRACTING AN INTEGER"
270 PRINT "IN THE RANGE OF (1) TO SOME NUMBER (A)"
280 PRINT "FROM ANOTHER (B),WITH THE DIFFERENCE"
290 LEAVING(B) FOR THE NEXT TURN.THE"
300 PRINT "LAST ONE TO SUBTRACT LOSES. HERE WE GO": RETURN

```

```

1  POKE 24576,54: CALL 17044
2  DIM A$(2)
3  M=15
4  GOSUB 300
5  PRINT "**** GAME OF 15 MATCHES ****"
6  PRINT
7  PRINT "DO YOU NEED INSTRUCTIONS ",A$
8  IF A$="Y" THEN GOSUB 700
9  PRINT
10 INPUT "DO YOU WANT TO GO FIRST ",A$
11 M:=R=0
12 PRINT : INPUT "HOW MANY MATCHES DO YOU WANT TO START WITH ",M
13 GOSUB 300
14 IF A$="Y" THEN 70
15 GOSUB 100
16 GOSUB 300
17 GOSUB 200
18 GOSUB 300
19 GOTO 65
20 IF M=1 THEN 520
21 R=M-4: INT (M/4)
22 IF R>1 THEN 130
23 C=1: RND (X):C=INT (C)+1
24 GOTO 140
25 C=(R+3)-4: INT ((R+3)/4)
26 M=M-C
27 PRINT "I'M THINKING !!!"
28 MUSIC "x5/3 x5/3 x5/3 444 444 x5/3 x5/3 321 321 x7 500000"
29 IF C=1 THEN 172
30 PRINT : PRINT "OKAY, I'LL TAKE ":C;" MATCHES."
31 FOR X=1 TO 400: NEXT X
32 RETURN
33 PRINT : PRINT "OKAY, I'M GOING TO TAKE ONLY 1 MATCH."
34 GOTO 140
35 IF M=1 THEN 500
36 PRINT "OKAY HUMAN.. THERE ARE "M;" MATCHES LEFT."
37 PRINT : INPUT "HOW MANY DO YOU WANT TO TAKE",M
38 PRINT
39 IF M=1 THEN 238
40 IF M>3 THEN 220
41 GOTO 240
42 PRINT "TSK!TSK!": MUSIC "3 3 4 4 50"
43 PRINT "YOU CAN ONLY TAKE 1,2, OR 3 !!!"
44 GOTO 200
45 IF M>H THEN 250
46 PRINT "YOU ONLY HAVE "M;" MATCHES!": MUSIC "345 666 x7x7"
47 PRINT : GOTO 200
48 M=M-H
49 RETURN
50 CALL 17044
51 FOR J=1 TO M: COLOR =5: SHAPE =5
52 VLIN 5,10,2xJ
53 COLOR =5
54 PLOT C+J,4
55 NEXT J
56 RETURN
57 GOSUB 300
58 PRINT : PRINT " YOU LOSE!!!": MUSIC "500 /+30000000000"
59 PRINT "TOO BAD. BETTER LUCK NEXT TIME."
60 GOTO 600
61 GOSUB 400
62 PRINT "VERY GOOD. YOU'VE WON!!!"
63 MUSIC "/5 /7 /5 /7 33 7 54000"
64 PRINT "I TOOK THE LAST MATCH."
65 GOTO 600
66 CALL 17044
67 POKE 40768,2: POKE 40961,512
68 INPUT "DO YOU WANT TO PLAY AGAIN",A$
69 IF A$="Y" THEN 20
70 PRINT : PRINT "OKAY, MAYBE NEXT TIME."
71 MUSIC "50 40 33 /1 /1 /1 x2000"
72 FOR X=1 TO 100: NEXT X
73 M=15
74 GOSUB 300
75 COLOR =1
76 FOR Y=1 TO M
77 PLOT 2xY,4
78 NEXT Y

```

```

660 FOR X=1 TO 200: NEXT X
670 CALL 17846
680 STOP
690 FOR X=1 TO 900: NEXT X
692 CALL 17846
695 RETURN
700 CALL 17846: POKE 40960,2: POKE 40961,512
710 PRINT "WE BEGIN THE GAME WITH A ROW OF MATCHES."
715 PRINT : GOSUB 690
720 PRINT "THEN WE TAKE TURNS REMOVING 1,2,3 MATCHES UNTIL THEY ARE ALL GONE."
725 PRINT : GOSUB 690
730 PRINT "WHOEVER TAKES THE LAST MATCH   LOSES."
735 PRINT : GOSUB 690
740 PRINT "IT'S A THINKER'S GAME AAND I'M   GOOD AT IT."
750 PRINT : GOSUB 690
755 RETURN
800 END

```

## M B ENTERPRISES, Inc items for sale.

1. Adapter cable to allow hooking ATARI type joy sticks to the IM-1. With this cable and a small modification to the Atari Joystick, you can get the use of the IM-1 and Atari Joystick.

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All items limited quantities, first come first serve. Please alloww 4 to 6 weeks for delivery.

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## SOFTWARE

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Have you ever programmed yourself into a corner? You need a ten line subroutine but have space for only five lines. Don't worry, BASNUM is here! Renumber your entire program from the beginning OR renumber starting from ANY line. You specify the starting point, load your program and CALL BASNUM. It does the rest, including changes to all line references. It's loaded with error checking which makes it easy to use.

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If you have ever tried to sort a lengthy list of strings in BASIC, then you know how slow APF can be. No more! SUPER SORT is a machine language sorting routine which can be included in your programs to speed string sorts by over 100 times. A few simple POKES followed by a CALL is all that's needed. You can include SUPER SORT in your existing programs (it is supplied with an APPEND routine allowing your program to be loaded "behind" the machine code), or you can write a new program behind SUPER SORT. A truly powerful routine.

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No, you don't need a disk system to write Assembly Language programs. Hexmart's TAPE ASSEMBLER allows you to write those programs using 6800 code. Buy now and receive the following: 1) two programs - screen only and line printer versions, 2) instructions - including how to use and incorporate Assembly code in the APF, 3) 6800 Assembly Language work sheets, and 4) a brief introduction to Assembly Language programming. Learn to make the APF fly!

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You say you have a house full of diskettes and you not sure which one contains that needed program? DISK DIR to the rescue! Creates a master file of up to 200 titles from the directories of all your diskettes. You name each disk with any three-character code and DISK DIR automatically reads all program names on the disk, sorts them into alphabetical order, and stores them in the master file. Editing allows the master file to be updated as your collection of programs change.

DISK MOO / INIT40 : A two program set. For all serious disk users.

\$12.95 on cassette - both load in 8K, transferable to disk

DISK MOO - Numerous features allow the user to read any track and sector from an APP disk, display it on the screen, place it in RAM, modify it, or write it back to disk. Automatic stepping allows work on contiguous or separate sectors. READ/EXAMINE/MOIFY/WRITE. You can even read disks from other popular computers including Radio Shack and TI.

INIT40 - Tired of 34 tracks of 8 sectors? How about 40 tracks of 10 sectors! Yes, you can now INITIALize your diskettes beyond APP. These INITIALized disks are still compatible with APP's OOS. However when used with DISK MOO, you get an additional 32K of storage. These two programs are a must for any serious disk owner.

\*\*\*\*\*  
SPOTLIGHT on SOFTWARE : A closer look at HEXMART's SUPER BASNUM

SUPER BASNUM is a line renumbering program which incorporates the features found in numerous larger computer systems. Below is a review of those features:

#1. TOTAL USER FLEXIBILITY

You specify the conditions... Renumber the whole program with any beginning line number and increment or renumber a portion of the program starting at any line number.

#2. REFERENCED LINE POINTERS AUTOMATICALLY UPDATED

"BASNUM" has been designed to accomodate all of APP BASIC's referenced line "calls". (ON) GOTO, (ON) GOSUB, IF-THEN, and PRINT USING (when referenced to line #). All line number references will be changed.

#3. OCCUPIES NO USER RAM

Since "BASNUM" exists in an area of memory not normally used by BASIC, most any program that will load into memory can be renumbered. Works in 8 or 16K IM-1's and 27K IM-2's.

#4. REM STATEMENTS IGNORED

All code following a REM statement is ignored. As a result, Assembly (machine) language subroutines written under a REM are unaffected by "BASNUM".

#5. UNIQUE ERROR CHECKING

"BASNUM" has been given four (4) error handling routines. If it finds any of these errors, it will abort renumbering and display an error message. These unique checks guard against user and program generated problems.

#6. USER FRIENDLY

"BASNUM" is menu driven. Combined with easy to understand "prompts", error checking, and mistake recovery, even the first-time user should have no trouble.

\*\*\*\*\*  
All programs are supplied on quality cassette tape and are transferable to diskette. All will load and run in an 8K computer. Documentation outlines conversion to 16K. Prices include all shipping and handling. Each program is sold with a 60 day replacement guarantee - if it fails, return the original copy to HEXMART for a free replacement.

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| _____ TAPE ASSEMBLER    | \$14.95 ea. | Grand Rapids, MI 49504 |
| _____ DISK OIR          | \$12.95 ea. |                        |
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Now Available : SUPERFILE - A data base management program. Totally flexible - You specify field sizes and printout formats. Sort on any field you choose!  
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Write us if you would like more information.

# BUY ONE GET ONE HALF PRICE!

That's right, from now until January 5, 1983 if you buy one game at regular price you may buy a second game of equal or less value for half off the regular price. So now is the perfect time for you to stock up on APF home computer games.

## THE GAMES....

### FROGGER

Stop! Don't put another quarter in a Frogger arcade machine. Now you can play it on your APF home computer. Just like the arcade game you have to get the frog across the road. Three skill levels and high resolution graphics will constantly keep you challenged... \$7.00

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First it was a great arcade game, then it became a great home video game, and now it's a great APF home computer game. You must move your space ship to either avoid or destroy the on coming alliens. Be careful -- they can fire back. A lot of the details from the original arcade game are there in this high resolution graphic game..... \$8.00

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Avoid those long lift lines and sore muscles with this fast action game. You have to move out of the way of the on coming trees. Like real skiing except that you have four chances to try again if you hit one. High resolution graphics and many sounds will provide hours of fun..... \$7.00

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Dodge the on coming cars in your turbo charged race car. The road is long and the cars are fast, so be ready for almost anything. But don't worry -- you have four chances to try again if you hit one. This colorful, high resolution graphic game is very challenging and will provide many hours of fun..... \$7.00

### ASTEROIDS

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---

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Austin, Tx. 78750

LOOK, UP ON THE HILL!! IT'S A BUG, IT'S A WORM, NO IT'S  
CENTIPEED!!! CENTIPEED!!! CENTIPEED!!! CENTIPEED!!! CENTIPEED!!!

Your mushroom garden has been invaded by a giant centipeed and a pesky spider. Shoot the centipeed parts before they reach the bottom of the garden. Hit the stationary dragonfly for bonus points before he's squished. Sounds easy, huh? Well it's not! The centipeed breaks in two each time it's shot, and some parts take more than one shot to be destroyed! Three skill levels in this popular arcade type game. 90% machine language for fast high resolution! For Christmas gifts!

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Danville, Illinois 61832

# DATAComp

computer software

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All three parts on one tape for 9K machines. Includes high - resolution animation, text modes, and instruction booklet. **Only \$15.50**

\*\*\*\*\*  
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7. \_\_\_\_\_
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\*\*\*\*\*

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\*\*\*\*\*

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